

Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the present application:

Please amend claims 13, 39, and 42 – 45 as follows:

- 1-12. (canceled)
13. (currently amended) A sol-gel process for producing a metal oxide particle comprising;
- a) providing a mixture comprising a halogen-containing target molecule and a polyhalogenated metal alkylalkoxy compound;
  - b) starting a sol-gel process with an initial amount of a metal oxide precursor;
  - c) adding the mixture from a) to the metal oxide precursor; and
  - d) ending the sol-gel process.
14. (previously presented) The sol-gel process of claim 13 further comprising adding an additional amount of the metal oxide precursor before step d).
15. (previously presented) The sol-gel process of claim 14, wherein the initial amount of the metal oxide precursor used in step b) is between about 90 and about 10 % and the additional amount of the metal oxide precursor is between about 10 and about 90 %.
16. (previously presented) The sol-gel process of claim 14, wherein the initial amount of the metal oxide precursor used in step b) is between about 75 and about 25 % and

the additional amount of the metal oxide precursor is between about 25 and about 75 %.

17. (previously presented) The sol-gel process of claim 13, wherein the time period for starting the sol-gel process in step b) is variable.

18. (previously presented) The sol-gel process of claim 13, wherein the time period for starting the sol-gel process in step b) is less than about 1 hour.

19. (previously presented) The sol-gel process of claim 13, wherein the time period for starting the sol-gel process in step b) is between about 1 and about 20 minutes.

20. (previously presented) The sol-gel process of claim 13, wherein the time period for starting the sol-gel process in step b) is between about 2 and about 10 minutes.

21. (previously presented) The sol-gel process of claim 13, wherein based on the initial amount of the metal oxide precursor between about 0.04 and about 0.4 mol % of the polyhalogenated metal alkylalkoxy compound is used.

22. (previously presented) The sol-gel process of claim 13, wherein based on the initial amount of the metal oxide precursor between about 0.1 and about 0.3 mol % of the polyhalogenated metal alkylalkoxy compound is used.

23. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule comprises between about 5 and about 65 weight % halogen.

24. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule comprises between about 15 and about 50 weight % halogen.

25. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule has a molecular weight between about 250 and about 5000 Dalton.
26. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule has a molecular weight between about 300 and about 4000 Dalton.
27. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule has a molecular weight between about 400 and about 3000 Dalton.
28. (previously presented) The sol-gel process of claim 13, wherein based on the initial amount of the metal oxide precursor between about 0.1 and about 10 % by weight of the target molecule is used.
29. (previously presented) The sol-gel process of claim 13, wherein based on the initial amount of the metal oxide precursor between about 0.2 and about 5 % by weight of the target molecule is used.
30. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule is chlorinated.
31. (previously presented) The sol-gel process of claim 13, wherein the halogen-containing target molecule is fluorinated.
32. (previously presented) The sol-gel process of claim 13, wherein the metal oxide is selected from  $B_2O_3$ ,  $Al_2O_3$ ,  $SiO_2$ ,  $SnO_2$ ,  $ZrO_2$ ,  $TiO_2$ , or combinations thereof.

33. (previously presented) The sol-gel process of claim 14, wherein the adding an additional amount of the metal oxide precursor provides a metal oxide surface coating for the metal oxide particle.
34. (previously presented) The sol-gel process of claim 33, wherein the metal-oxide surface coating is chemically protective.
35. (previously presented) The sol-gel process of claim 33, wherein the metal-oxide surface coating is colorless.
36. (previously presented) The sol-gel process of claim 33, wherein the metal-oxide surface coating is between about 1 and about 30 nm thick.
37. (previously presented) The sol-gel process of claim 33, wherein the metal-oxide surface coating is between about 2 and about 20 nm thick.
38. (previously presented) The sol-gel process of claim 13 further comprising providing at least one functional group.
39. (currently amended) The sol-gel process of claim 38, wherein the functional group is selected from the group consisting of carbonyl groups, amino groups, epoxy groups, hydroxyl groups, [[or]] and thiol groups.
40. (previously presented) A metal oxide particle produced by the sol-gel process of claim 13.
41. (previously presented) The metal oxide particle of claim 40 further comprising at least one biomolecule coupled thereto forming a conjugate.

42. (currently amended) The metal oxide particle of claim 41, wherein the biomolecule is selected from the group consisting of proteins, glycoproteins, peptides, nucleic acids, peptidic nucleic acids, saccharides, hormones, haptens, vitamins, naturally occurring binding partners, artificially produced binding partners, antigens, and combinations thereof.
43. (currently amended) The metal oxide particle of claim 41, wherein the biomolecule is selected from the group consisting of antibodies and fragments thereof.
44. (currently amended) The metal oxide particle of claim 43, wherein the antibody is selected from the group consisting of monoclonal antibodies, polyclonal antibodies, chimeric antibodies, and fragments thereof.
45. (currently amended) The metal oxide particle of claim 41, wherein the biomolecule is selected from the group consisting of streptavidin, avidin, biotin, and combinations thereof.
46. (previously presented) The metal oxide particle of claim 40, wherein the particle is a label for a biomolecule.
47. (previously presented) The metal oxide particle of claim 40, wherein the particle is a sunscreen agent.
48. (previously presented) The metal oxide particle of claim 40, wherein the particle is a toner.
49. (previously presented) The metal oxide particle of claim 40, wherein the particle comprises an insecticide.